

## **Microbe-Electrode-Interactions**

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Microbe electrode electron transfer reactions are key to a number of novel research directions within basic and applied science. Regarding the transfer of electrons from microorganisms to electrodes we know at least for a small number of model organisms how the electron transfer is conducted on a molecular level. Since genetic systems have been developed for these organisms, we are moreover able to engineer production strains that can catalyze novel anoxic fermentation routines. These routines are characterized by the higher oxidation state of the product compared to the substrate and the concomitant production of an electrical current as a fermentation side product. In the reverse direction, evidence was provided that some organisms might be able to import electrons directly from a cathode surface. Coupling this process to an autotrophic lifestyle would enable sustainable biotechnology with carbon dioxide as carbon source and electricity as sustainable energy source. In this talk I will highlight what we know about electron transfer from and to electrodes and what typical applications of these electron transfer interactions could be.